Claims

1. A ball valve (1) having a housing (H) which is mounted for rotation about an axis of operation (A), a valve member which is a ball (2), the ball (2) having a passage (P) through which fluid flows from an inlet (I) of the housing (H) to an outlet (O) of the housing (H), and the ball (2) having at one end of the passage (P) a metering opening (4) for the fluid, the ball (2) being rotatable about the axis of operation (A) between a first closed position in which the opening (4) is concealed by an adjacent housing wall and fluid flow through the passage (P) is prevented, and a fully open position in which the opening (4) is aligned with one of the inlet (I) and outlet (O) of the housing (H) to permit of maximum fluid flow through the passage (P), and characterized in that the opening (4) in the ball (2) at the one end of the passage (P) is provided by removing material by high pressure fluid jetting.

2. A. valve according to claim 1 characterized in that the opening (4) includes a slot part (S) which extends generally normally to the axis of operation (A) of the ball (2) and when the ball (2) is rotated a small amount from its closed position, permits only a minimal fluid flow through the passage (P), and the slot part (S) opening into a main part (M) of the opening (4) which when the ball (2) is rotated to its fully open position allows a maximum fluid flow through the passage (P).

3. A valve according to claim 1 characterized in that a second end of the passage (P) opposite to the first end, and a passage part between the

first and second ends of the passage (P) is a drilling and the opening (4) being formed at the one end of the passage (P) where the drilling has not penetrated an outer wall of the ball (2).

4. A valve according to claim 1 characterized in that the ball (2) is provided in a metallic material.

5. A valve according to claim 1 characterized in that to enable the ball (2) to be rotated in the housing (H) about the axis of operation (A), the ball (2) includes in the outer wall of the ball (2), a recess (R) to receive an operating device (7,6) which extends through the housing (H) to an external operating position.

6. A valve according to claim 1 characterized in that the valve includes a valve body (1) in which the housing (H) is provided, the body having fluid inlet and outlet connections (5) which permit fluid to flow to the inlet (I) and from the outlet (O) of the housing (H) in which the ball valve member (2) is provided.

7. A method of making a ball (2) for a ball valve (1), the ball (2) in use being mounted in a housing (H) for rotation about an axis of operation (A), the ball (2) having a passage (P) through which fluid flows from an inlet (I) of the housing (H) to an outlet (O) of the housing (H), and the ball (2) having at one end of the passage (P) a metering opening ($) in the ball at the

one end of the passage (P) by removing material by high pressure fluid jetting.

8. A method according to claim 7 characterized in that a second end of the passage (P) opposite to the first end, and a main passage part between the first and second ends of the passage are provided by drilling prior to the opening at the first end of the passage (P) being formed through the wall of the ball (2).

9. A method according to claim 7 characterized in that the opening (4) is formed by fluid jetting using fluid pressures of at least 2000 bar and more preferably at least 3000 bar and yet more preferably of about 4000 bar.

10. A method according to claim 7 characterized in that during fluid jetting, desirably the method includes inserting into the passage (P) a hollow shaft to support the ball (2) and maintain the ball in a fixed position so that the opening (4) may accurately be formed.

11. A method according to claim 7 characterized in that the fluid is jetted from a nozzle which is positioned close to the wall of the ball (4) at the one end of the passage (P) and the ball (1) is maintained stationary during water jetting and the nozzle is moved to create the desired shape of opening (4).

12. A method according to claim 7 characterized in that the method includes providing a recess (R) in a wall of the ball (2) to receive an operating device (7) by which in use, the ball (2) may be rotated in the housing (H) about the axis of operation (A).